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Recommendations for resumption of regular sports activity after COVID-19 pandemic

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Background

The COVID-19 pandemic and the restrictive measures adopted internationally in order to contain the virus has led to a disruption of organised sport at all levels. During the lockdown period, outdoor exercise was forbidden or partly restricted in some cases without access to sports facilities including gyms or sports centres. As the number of infections and hospitalisations decreased, the strict lockdown was gradually lifted. Team sports have commenced reintroducing their training routines in groups, and the Bundesliga reactivated the professional league behind closed doors on 16th May 2020 despite serious concerns raised by some in the scientific community [1]. Additional sporting competitions such as boxing, Ultimate Fighting Championship and Formula 1 are also scheduled to resume in May-June 2020 [2]. It is worth noting that social distancing is possible in some sports (e.g., tennis, swimming, athletics and golf) whereas this is not always possible in other cases (e.g. football, rugby, basketball, cycling and boxing), and careful measures of hygiene and control are especially needed for these more at risk sports to regulate the safety of sport resumption and to avoid possible infections. For more thorough information about the risk factors and symptoms to be considered to make the return to sport as safely as possible, consult Carmody et al. [3] and Niess et al. [4]. The present editorial provides practical and medical recommendations on the resumption to sport process.

Group identification

During the resumption to sport process, the following groups must be distinguished (individuals below refer to both leisure time and professional athletes or persons starting new with regular physical activities):

1. Individuals without symptoms and signs.
2. Individuals with a positive SARS-CoV-2 test without any Covid-19-disease

symptoms.

3. Individuals who experienced Covid-19-disease with mild symptoms, only needing outpatient treatment and quarantine for 14 days.
4. Individuals with moderate symptoms but had inpatient treatment due to an increased risk derived from pre-existing conditions (e.g., asthma, diabetes).
5. Individuals with severe symptoms, inpatient treatment, including intensive care without artificial respiration.
6. Individuals with severe symptoms, inpatient treatment in intensive care and on artificial respiration.

It is imperative that a medical examination is performed in cooperation with a respiratory physician and/or cardiologist.

Recommendations for individual groups

Group 1: Before resuming sport without any past medical history evidence, risk stratification has to be evaluated through questionnaires compiling data related to history, close contact with people with positive SARS-CoV 2 test, or contact with people of high risk, or in so called hotspots. The individual has to confirm being free of any symptoms and this must be documented. Exercise testing is likely to be necessary in some sports due to the expected detraining after lockdown, and exercise testing must be performed according to the latest Covid-19-disease / SARS-CoV-2 health and safety regulations.

Group 2: Resumption after 14 days quarantine. Examinations ought to include history, physical examination, 12-channel electrocardiogram (ECG), lung function assessment (if

necessary), and both cardiac echo and stress test (if necessary) [5].

Group 3: Resumption after a quarantine period of two weeks and strict social distancing for another two weeks.

A medical examination by a sport and exercise medicine physician with history, physical examination, blood test focused on critical markers (e.g., C-Reactive Protein, high sensitivity troponin-I, natriuretic peptides) if necessary, and resting ECG (e.g., changes of Q-wave, ST-stretch, T-wave). Additional lung function assessment and stress test with ECG, blood gas analysis and spiroergometry are recommended if symptoms have involved respiratory impairment. Medical surveillance for six months after return to sport if any symptoms are present but not limiting return to sport.

Group 4: Same procedure as for group 3 but including compulsory ergometry with blood gas analysis and/or spiroergometry. Chest X-ray examination and depending on the findings obtained during the inpatient stay, high-resolution computed tomography of the thorax in the most severe cases always in consultation with a lung specialist. Cardiac examinations depending on history, symptoms and signs, cardio-magnetic resonance imaging (MRI) after consultation with a cardiologist.

Groups 5 and 6: A complete pulmonary and cardiological examination is necessary ("cardiac markers" such as high sensitivity troponin-I or natriuretic peptides) including resting ECG, lung function, echocardiography (if necessary), stress test with ECG and blood gas analysis.

Depending on previous findings in heart rate, computed tomography of the thorax and

cardiac MRI examination in consultation with a respiratory physician and cardiologist, hospital discharge can take place. A final medical check and sports statement is mandatory.

Resumption of sport can occur in uncomplicated cases 10 days after recovery from infection. In patients with more severe organ involvement, pneumonia, myocarditis or neurological signs an individualized plan is necessary[4,5]. Testing for SARS CoV-2 can be carried out to support a return to play decision but is not essential unless stipulated (e.g., National/International Sports Federation, Government).

Conclusions

An adequate assessment of the resumption of sporting activity is based on a case-by-case decision that must consider the individual situation of the athlete including pre-existing conditions, the type of sport and the risk of infection from other athletes (e.g., increased risk in contact/team-sports). The recommendation to return to play will be based on the results of the examination and individual assessment in consultation with the sport and exercise medicine physician, specialists in pulmonary medicine and sport cardiology (or extended multidisciplinary team), coaches and training specialists. After a contact ban, an athlete should be provided with recommendations on sports resumption that are in accordance with national and regional guidelines. After a longer period of interruption in sport caused by more severe health issues, increases in training should be gradual and individualised by monitoring signs and symptoms of the health issue.

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